

THE

November, 1960

CHEMIST

VOLUME XXXVII



NUMBER 11



Edward L. Gordy, F.A.I.C.
Receives Chicago AIC Chapter
Honor Scroll

(See page 397)

TOTALLY NEW!



New expanded polystyrene case offers advantages never before found in "C.P." Acid containers!

Lighter! Stronger! Safer! Exclusive new expanded polystyrene case for **B&A® "C.P." Acids!**

AN EXCLUSIVE DEVELOPMENT of General Chemical, this new "one-way" case holds four 5-pint "C.P." acid bottles in contoured pockets formed of shock-resistant polystyrene.

SMALLER! LIGHTER! Tare weight of this substantially smaller case is less than 11 lbs. with empty bottles.

EASIER TO HANDLE! Finger grips make case easy to handle. Cases stack securely with interlocking top and bottom.

SAFER! The new polystyrene case is chemical and weather resistant. Form-

fitted pockets protect bottles.

STRONGER! The new case, far stronger than other "one-way" cases now in use, has met the most stringent ICC drop test requirements.

ORDER NOW! These new units are now ready for shipment from General Chemical's B&A distributing points coast to coast. More than a year of intensive research and testing prove this new case superior to any other type of "shipper." For information phone or write your nearest B&A office.



BAKER & ADAMSON® "C. P." ACIDS

GENERAL CHEMICAL DIVISION

40 Rector Street, New York 6, N. Y.

Offices: Albany° • Atlanta° • Baltimore° • Birmingham° • Boston° • Bridgeport° • Buffalo° • Charlotte°
Chicago° • Cincinnati° • Cleveland° • Denver° • Detroit° • Houston° • Jacksonville° • Kalamazoo°
Los Angeles° • Milwaukee° • Minneapolis° • New York° • Philadelphia° • Pittsburgh° • Portland (Ore.)°
Providence° • St. Louis° • San Francisco° • Seattle° • Kennewick°, Vancouver, Yakima (Wash.)

°Complete stocks carried here

Thomas

**GIVES YOU
SUPERIOR
SERVICE
BECAUSE...**



▲
Main Building



Order Filling Center

You deal with headquarters

Facilities housed in 165,000 sq. ft. of space.
Competent technological staff on call.
Orders filled promptly from vast warehouse.

You draw on large stocks

Three to six months supplies of the items listed in our catalog—mostly pre-packaged—in our stock for immediate shipment.
Widest assortments of Corning, Kimble and Coors items available from any single source.

You select from encyclopedic catalog

With factual, detailed descriptions—standard reference source throughout the free world.

You save time and money

Extensive pneumatic tube systems and conveyors speed delivery of orders.
More than 93% of orders shipped within two working days.
Accurate invoices and packing lists.
Substantial packing keeps breakage to less than 1/20th of 1%.
One-price policy insures lowest prices to all buyers—advance quotations unnecessary.

You are assured of satisfaction

Stocks carefully selected and continually inspected for quality and performance.
Prompt refund for any item found to be unacceptable for any reason.



ARTHUR H. THOMAS COMPANY

More and more laboratories rely on Thomas / Laboratory Apparatus and Reagents
VINE ST. AT 3RD • PHILADELPHIA 5, PA.

Telephone Service: Direct private wire New York to Philadelphia (no toll charge) REctor 2-5035

The CHEMIST

Reg. U. S. Pat. Off.

Publication of

THE AMERICAN INSTITUTE OF CHEMISTS, INC.

60 East 42nd street, New York 17, N. Y.

Entered as second class matter April 8, 1916 at the Post Office at New York, N. Y., under Act of August 24, 1912. Second class postage paid at New York, N. Y. Issued monthly.

Subscription price, \$3.00 a year to Members, \$4.00 to Non-Members. Single copy, this issue, \$0.35. Copyright, 1960, by THE AMERICAN INSTITUTE OF CHEMISTS, INC.

Vol. XXXVII

November, 1960

Number 11

THE AMERICAN INSTITUTE OF CHEMISTS

Council

Officers and Directors:

President, Dr. Milton Harris
President-elect, Dr. Johan A. Bjorksten
Secretary, John Kotrady
Treasurer, Dr. F. A. Hessel
Chairman of the Board, Dr. W. E. Kuhn

Councillors-at-Large and Directors:

Dr. R. P. Dinsmore Dr. S. D. Kirkpatrick
Dr. L. A. Hall Dr. John H. Nair
Dr. W. E. Hanford Dr. L. H. Reyerson
Dr. D. B. Keyes Dr. W. J. Sparks
 Dr. Max Tishler

Councillors:

Dr. A. M. Buswell, *Florida Chapter*
Dr. G. M. Cunningham, *Western Chapter*
Dr. E. J. Durham, *New York Chapter*
Dr. J. H. Dusenbury, *New Jersey Chapter*
Dr. James L. Jezl, *Philadelphia Chapter*
H. A. Levey, *Louisiana Chapter*
Lyle J. Mahar, *Niagara Chapter*
Dr. O. E. May, *Piedmont Chapter*
Dr. Clem O. Miller, *Washington Chapter*
Dr. Emil Ott, *Past President*
Dr. George F. Rugar, *Ohio Chapter*
Bernard E. Schaar, *Chicago Chapter*
G. H. Taft, *New England Chapter*
Dr. Walter W. Thomas, *Delaware Chapter*
Clark E. Thorp, *Beaver Falls Chapter*
Emerson Venable, *Pittsburgh Chapter*
Dr. A. H. Warth, *Baltimore Chapter*
Bernard Weiner, *Midwest Chapter*
Martin B. Williams, *Alabama Chapter*
Dr. J. L. Wilson, *Twin City Chapter*

THE CHEMIST

Editor, V. F. Kimball

Advisory Board:

Dr. Joseph F. Abere
Lawrence H. Flett
Dr. Richard L. Kenyon
D. H. Killeffer
James W. Perry
Bernard E. Schaar
Dr. William J. Sparks
P. J. Wood
Dr. A. C. Zettlemoyer

Contributing Editors:

M. R. Bhagwat
D. H. Killeffer
Dr. Frederick G. Sawyer
Donald Slavin
Florence E. Wall
Martin B. Williams

Department Editors:

Dr. Ed. F. Degering, *Condensates*
Doris Eager, *Opportunities*
Richard L. Moore, *Public Relations*
Dr. Rudolph Seiden,

Chemical Books Abroad
Dr. Kurt Konigsbacher,
Life with Chemistry

Deadlines for THE CHEMIST: For the December issue the deadline is Nov. 15.

THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in THE CHEMIST.

IN THIS ISSUE

Editorial:

Patent Ownership in Government Sponsored Research, <i>Dr. Johan Bjorksten, F.A.I.C.</i>	393
--	-----

Special AIC Announcements:

Compulsory Registration	394
To All Chapter Chairmen	394
New Contributor for The Chemist	395
Deadline for AIC Membership Applications	395
About AIC Members	396 & 408
The Phrase Rule, <i>Edward L. Gordy, F.A.I.C.</i>	397
Chemist-at-Large, <i>Dr. Robert F. Marschner</i>	404
Presentation of Honor Scroll to Edward Gordy	407
Frank Words on Contract Counsel and Research, <i>Raymond Stevens, Hon. AIC</i>	409

Communications:

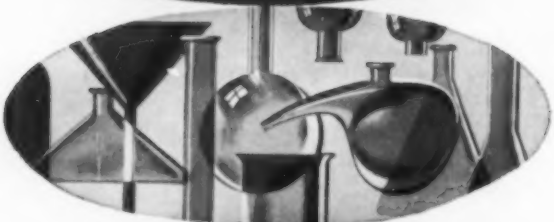
Wanted: Article on the Public's Responsibility to Scientists	415
On Political Articles	415
Should Basic Research be Required?	416
Professional Affairs to be Discussed	417
Opportunities	418
"In the Service of Medicine and Mankind"	419
Professional Appointments	422

To Come in December

Each December, the outstanding college students who have received AIC Student Medals during the year are listed. Dr. Roger W. Truesdail, F.A.I.C., of Los Angeles, Calif., recently honored by the Western Chapter, will show "The Role of the Independent Laboratories in America's Progress." Dr. J. F. Abere, F.A.I.C., (himself a former Student Medalist) of Minnesota Mining & Manufacturing Co., St. Paul, Minn., will report on, "How Do Chemists Work?" The late Dr. Stewart J. Lloyd, F.A.I.C., left a fine paper on "Science and Religion," which will appear in condensation.

Advertisers Render a Service to You

Allied Chemical, General Chemical Division <i>Inside Front Cover</i>	414
Bios Laboratories	424
Commercial Solvents Corp.	392
Evans Research & Development Corp. <i>Inside Back Cover</i>	418
LaWall & Harrison	418
U. S. Stoneware <i>Outside Back Cover</i>	414
The Lento Press	421
Arthur D. Little, Inc.	395
Nopco Chemical Co.	408
Phoenix Chemical Laboratories	403
Robinette Research Laboratories	396
Foster D. Snell, Inc.	389
Arthur H. Thomas Company	389



YOUR BEST SOURCE
FOR THE CHEMICALS
YOUR INDUSTRY USES

All you need—at maximum speed! Commercial Solvents is a prime source of first-grade chemicals to serve every industrial, agricultural, and animal nutrition purpose. Be sure of quality. Be sure of service. Be sure of delivery.

Call the Commercial Solvents Corporation office nearest you!

INDUSTRIAL

Methanol • Ethyl Alcohol • Ammonia • Butanol • Formaldehyde
2-Nitropropane • Hydroxylamines
Tributyl Phosphate • AMP • Methylamines • Pharmaceutical Chemicals



AGRICULTURAL

Hi-D® Ammonium Nitrate Fertilizer
Ammonia, Anhydrous and Aqua
Nitrogen Solutions

ANIMAL NUTRITION

Bacifer® Zinc Bacitracin Antibiotic Feed Supplements • Choline Chloride • Riboflavin Supplements
Vitamin B₁₂ Supplements

COMMERCIAL SOLVENTS CORPORATION

EXECUTIVE HEADQUARTERS: 260 Madison Avenue, New York 16, N. Y. • OFFICES IN PRINCIPAL CITIES
PLANTS: Sterlington, La. • Peoria, Ill. • Terre Haute, Ind. • Agnew, Calif. • Newark, N. J. • Harvey, La.

Patent Ownership in Government Sponsored Research

Dr. Johan Bjorksten, F.A.I.C.

AIC President-elect

THE question of patent ownership in Government sponsored research has been discussed often. Many are the different opinions which have been expressed. Those on one extreme have felt that Government sponsorship should result in total Government ownership of all rights; others contend that, at least on no-profit contracts, all rights should belong to the contractor and that the Government should pay a royalty on patents resulting from such contracts. Between these extremes, there exists a middle-ground view, that the Government is entitled to a free license but that the commercial rights should belong to the contractor.

Let us analyze these views and attempt to determine which, on the average, would be most apt to lead to a maximum of result at a minimum cost to the taxpayer.

The extreme view that the Government should have no patent rights would be contrary to the equities in the case. Contracting officers rightly insist on at least free license to the Government.

On the other hand, some agencies, notably the Institutes of Health, the Atomic Energy Commission, and the Space Agencies have taken the view that all patent rights, including com-

mercial rights, should belong to the Government. This would seem a reasonable view, if:

- (1) The Government were in a position to promote or stimulate the use of such patents, and
- (2) The Government contracts otherwise offered the same financial incentives as a private contract.

Neither of these premises holds true:

- (1) Emerson's statement that if a man can make a better mouse-trap, the world will make a beaten path to his door is as widely quoted as it is fallacious. Those who deal with patents well know that even a highly meritorious invention is apt to be left sleeping unless someone has an uncommonly great incentive to go through with all the headaches, heartaches and hazards that are inseparable from such developments. The Government, in peacetime, has no such great incentives. This was amply demonstrated after the last war when extremely few of the Government-held Alien Property Custodian patents were put to practical use.
- (2) When Government research contracts are discussed, there is seldom sufficient consideration of the turnover factor in relation to research. A merchant who sells a product with 7% profit, buys more merchandise, sells it at another 7% profit, and repeats this, so that he makes his 7% at least four or five times in a year, yielding him a total of 28-35%.

A research contract limited to 7% profit, as is almost invariably the case with Government sponsored work, is usually of one year's duration, so that the turnover is only once a year.

A merchant who could turn over his goods only once a year would be forced out of business. So will any self-supporting research establishment which is confined to such Government contracts unless some compensating factor is injected. The compensating factor of commercial patent rights costs the Government nothing, and greatly broadens the range of competent laboratories willing to bid on Government research tasks.

In view of the above facts, and after careful discussion, the Council of THE AMERICAN INSTITUTE OF CHEMISTS passed the following resolution:

Recognizing that variant policies of the several Federal agencies with regard to the rights to invention flowing from research under contracts placed by them with private contractors, and,

Concerned for the protection of the public welfare and the preservation of the American system of free enterprise,

Is constrained to declare publicly its position regarding patent rights to such inventions, and therefore,

Be it resolved, That The American Institute of Chemists, through its

national council, affirms its belief in the principles that the Government is entitled to, but limited to, royalty-free use of any and all inventions developed for it under contract research, and declares that the contractor should be entitled to ownership and commercial rights to such inventions; and

Be it resolved, further, that copies of these resolutions be forwarded to the chairman of the Aeronautics and Space Science Committee of the United States Senate and to the House Committee on Science and Astronautics.

This form of contract is by far the most common for Air Force, Navy, and Army, which have certainly been the most successful and are the most experienced in letting research contracts.

It is the considered opinion of the Council of THE AMERICAN INSTITUTE OF CHEMISTS that the general adoption of this form of contract by all Government agencies would greatly broaden the range of research contractors available, to the benefit of the Government and the taxpayer.

Special AIC Announcements

Compulsory Registration

At the recent meeting of the National Council, the subject of registration of chemists was discussed. The value of registration to special groups of chemists and to many chemists under certain conditions was brought out. However, it was felt that *compulsory* registration for all chemists was not desirable, and the following motion was adopted:

Professional responsibility for scientific or engineering work is a per-

sonal responsibility and is based on adequate training, experience, intellectual capacity and moral integrity. Registration is no substitute for it. Therefore, the AIC opposes *compulsory* registration of chemists and chemical engineers.

To All Chapter Chairmen

The chairman of each Chapter is a member of the Committee on Nominations. The duty of this Committee is to suggest names to appear on the Nomination Ballot for officers and councilors for the AIC. The nomina-

SPECIAL ANNOUNCEMENTS

tion ballot will be sent, in early Spring, to the membership, who decides which names shall appear on the election ballot.

In January 1961, the AIC Secretary will notify each member of the Committee on Nominations of the date for the receipt of suggested names for the positions of *President-elect*, to serve for one year and to succeed to the presidency in May 1962; and three *Councilors-at-large*, to serve for three years beginning May 1961. Any Fellow of the AIC may be nominated for these positions. It is not too soon to give careful consideration to the subject of your nominees.

New Contributor for The Chemist

Dr. Kurt Konigsbacher, F.A.I.C., of Evans Research & Development Corporation, New York 17, N. Y., chairman-elect of the New York AIC Chapter, will contribute short-short stories about "Life with Chemistry," beginning with the December issue of *THE CHEMIST*. He "will start pestering everybody immediately for colorful but printable interludes," for the new column. If you know of some, send them to him!

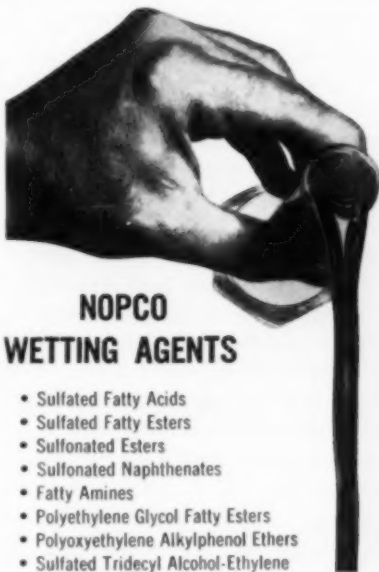
Deadline for AIC Membership Applications

November 7 is the deadline for receiving AIC membership applications for action at the December 7, 1960, meeting of the National Council. Ap-

plications for membership received after November 7 will be presented to the National Council meeting to be held in February. Please send applications to The Secretary, THE AMERICAN INSTITUTE OF CHEMISTS, 60 E. 42nd St., New York 17, N. Y.

Dr. Milton Harris, AIC president, is in Europe on business until the latter part of November.

A SKILLED HAND IN CHEMISTRY...AT WORK FOR YOU



NOPCO WETTING AGENTS

- Sulfated Fatty Acids
- Sulfated Fatty Esters
- Sulfonated Esters
- Sulfonated Naphthenates
- Fatty Amines
- Polyethylene Glycol Fatty Esters
- Polyoxyethylene Alkylphenol Ethers
- Sulfated Tridecyl Alcohol-Ethylene Oxide Adducts



**NOPCO
CHEMICAL COMPANY**

60 Park Place
Newark, N.J.

Harrison, N. J. • Richmond, Calif. • Cedartown, Ga.
Boston, Mass. • Chicago, Ill. • London, Canada

FOSTER D.
SNELL
INC.

RESEARCH AND
DEVELOPMENT
CONSULTANTS

Completely staffed with over 100 specialists, equipped with 10 stories of laboratories, backed by 36 years of experience in many fields:

**Product Development - Analyses
Engineering - Market Research
Physical Measurement - Toxicology
Bacteriology - Animal Work
Food Technology**

Bulletins and detailed information on request without obligation. Call Watkins 4-8800 or write to:

FOSTER D. SNELL, INC.
29 W. 15 St., N.Y. 11, N. Y.

About AIC Members

Professor I. M. Kolthoff, F.A.I.C., head, Department of Analytical Chemistry, University of Minnesota, received the Minnesota Award of the Minnesota Section of the American Chemical Society, in October. The award consists of a plaque and \$500. He was cited for his outstanding accomplishments in the field of chemistry and for his service to the profession.

Dr. G. M. Kline, F.A.I.C., of the National Bureau of Standards, Washington, D.C., was one of the members of the U. S. delegation to the tenth plenary meeting of Technical Committee 61 (Plastics) of the International Organization for Standardization, held in Prague, Czechoslovakia, in October.

Charles Allen Thomas, Hon. AIC, chairman of the Board of Monsanto Chemical Co., St. Louis, Mo., was awarded the Honorary Degree of Doctor of Laws, by Lehigh University, Oct. 9. **Dr. Harvey A. Neville, F.A.I.C.**, vice president and provost of the University, conferred the degree. Dr. Thomas was cited for his distinguished accomplishments as a scientist and as an industrial leader, and for his services in the national interest.

Dr. G. A. Abbott, F.A.I.C., professor emeritus of the Department of Chemistry, University of North Dakota, Grand Forks, No. Dak., has been honored by having his name chosen to designate the new \$750,000 chemistry building at the University. Abbott Hall is scheduled for completion in the fall of 1961. Dr. Abbott was chosen "in recognition of his long and faithful service to the University, its administration, faculty and students, and for his many contributions to chemistry, both as a distinguished teacher, influencing the lives of untold numbers of students, and through his many professional contributions in the field of chemistry."

Martin B. Williams, F.A.I.C., national AIC council representative from the Alabama AIC Chapter, has been appointed as a member of the Centreville, Alabama, Industrial Board. He is assisting with the preparation of a brochure giving information about Bibb County, Ala.

The Phrase Rule

Edward L. Gordy, F.A.I.C.

Communications coordinator, research and development department, Standard Oil Company (Indiana), 910 So. Michigan Ave., Chicago, Ill.

(Presented when the author received the Honor Scroll of the Chicago AIC Chapter, at a dinner in the Furniture Club, Chicago, Ill., Oct. 11, 1960)

CHEMISTS know that my title, "The Phrase Rule" is a play on the title of the famous *Phase Rule*, enunciated by Willard Gibbs. The Phase Rule of Professor Gibbs is useful but simple—about the only simple equation arrived at by the mathematical virtuosos who work in thermodynamics. It reads:

$$F = C - P + 2$$

I will not explain what these symbols mean, but will merely describe the kind of thing the rule tells us. It says that if you wish to keep ice cubes in boiling water, there is only one pressure and one temperature at which you can set up this convenient arrangement. If you know your Phase Rule, you can indeed keep ice cubes in boiling water. The advantages are obvious. You can serve iced tea and hot tea out of the same container—or so it might seem. One of your cups of tea would disappoint you. The Phase Rule is indeed useful, but not *that* useful.

Now my *Phrase Rule* deals with writing instead of with thermodynamics, and it is stated thus:

"Writing should look easy."

Stated more completely, the rule is:

"A piece of writing should read as if the writing of it was easy."

It is hard to be brief and yet complete and accurate when you say things in words. Willard Gibbs was lucky; he could avoid that problem. He simply put down a few letters and said, "F stands for degrees of freedom." And so on. He also had another great advantage: His law was unbreakable. It was a law of thermodynamics. He could sit back and watch the world obey, whether the world wanted to or not.

Any law concerning people, however, can be broken. In a way, that gives it more zing. There can be crime, punishment, rewards, detectives, cops, robbers—all the things that make television so exciting . . . and worthwhile.

You will ask, why is the *Phrase Rule* true? Why should things read as if they were easy to write?

First . . . and far and away foremost . . . if the ideas appear to flow easily, the reading also will be easy. That is one of the main goals of a writer.

A second argument in favor of the *Phrase Rule* is that readers are kind and considerate. The percentage of s.o.b.'s in the world is low. Most people are kind-hearted. They feel unhappy if a writer is having a tough time of it, just as you feel unhappy

when any public performer is having a tough time. You suffer with him. All non-writers are convinced that writing is easy. So, any sign that it is really hard work seems cruel indeed. The writer must therefore conceal his sweat and tears. If he mingles socially with his public, he should file down the calluses on his typing fingers . . . or finger.

Now let us examine a few kinds of writing. We can see how the Phrase Rule works, and perhaps pick up a few more indications that it is valid.

Newswriting

The writing with which we are most familiar is newswriting. Certainly the news does not read as if anyone beat his brains out to write it. There is a good reason. That writing looks easy because it is easy. There is nothing hard about telling what happened, or anyhow what you think happened. Accurate observation and the digging up of the true facts take practice, but the writing is easy. Almost anyone can be a newspaper reporter. It is fortunate that this is so. Otherwise, there could not be a local paper in every town. The human race does not produce that many good writers.

You may ask why, if newswriting is so easy, there should be schools of journalism. The answer is simple. There should not be schools of journalism . . . You will be more completely convinced if you do some research of your own. Simply ask any

leading editor how many of his good men took journalism, and how many took liberal arts. Ask him also how many of his good journalism graduates are glad they took it. Newswriting should look easy because that's what it is. Following the Phrase Rule comes naturally.

Sportswriting

Now let's look at a special type of newspaper work — sportswriting. Much of it violates the Phrase Rule. So, it is an interesting case to study.

The real job of a sportswriter is, first, to tell you what happened. If he is skillful, he can almost take you to the field or the court and let you watch the game. If he is an expert, he will tell you why things happened as they did. He will also give you some of the color and background.

The British can do that job. An extreme example, perhaps, is the newspaper story of a racquets match between Harrow and another school. One of the sentences read:

"Crawley was closing the face of his racquet on his forehand—a rare fault in his family."

There, my friends, is background!

Such writing is difficult. In the United States, most of the sportswriters do not even try. Instead they try something else. They use figures of speech.

Figures of speech are a fine, useful part of writing. But they are not easy, as every sportswriter quickly learns. He cannot think up fresh, new figures of speech each day. A few

have tried, with depressing results. One fairly prominent writer has a set of patterns. Today he portrays a golfer as a surgeon, taking apart a golf course. All the metaphors in that story deal with surgery. Tomorrow a football team may be an express train. All the figures of speech deal with railroading. This laborious effort does not tell the reader what he wants to know about the golf or the football.

Most of the sportswriters simply reuse the old figures of speech. The trend is dying out, but for a time the sports pages of America were the world's leading example of tired, stale, hackneyed writing. A baseball became "the horsehide," a football "the pigskin." No halfback ever carried the ball; he "lugged the leather." No one ever made a touchdown; he "hit pay dirt." A team could not even be a team; it became an "aggregation."

Such writing is bad. Its very existence proves that good writing is hard. It also proves that a writer should not strive beyond his abilities. Unless he can make it seem easy, he had better not try. Certainly he should not end up by insulting the intelligence of his readers. So sportswriting tends to confirm the Phrase Rule.

Poetry

We come now to a kind of writing that many will say cannot possibly seem easy: poetry. It likewise uses figures of speech—the hurdle that

threw the sportswriters so heavily. In addition, the poets use rhyme, rhythm, and alliteration. All of these things have about them an air of hard work. For example:

"... while the long-backed breakers
croon
Their endless ocean legends to the
lazy, locked lagoon."

The poet I think was Swinburne. He had to dig up all those words with "l's" in them. He had to find a word that rhymed with "croon," and yet was neither "moon" nor "June." Such problems are more difficult than reporting the number of bullet-holes acquired last night by a minor hoodlum. To the extent that the difficulty of the writing shows, however, Swinburne's poem leaves something to be desired.

Here are a few simple lines about the song of the nightingale:

"The same that oft-times hath
Charm'd magic casements, opening on
the foam
Of perilous seas, in faery lands
forlorn."

No strong rhythm, no heavy alliteration, no tricky rhyme. Nothing, really, except the intangible quality that makes these lines by Keats perhaps the most highly regarded in English poetry.

Not all readers appreciate these truths—not even all of the intelligent readers. A certain degree of sophistication is needed.

At Haverford a vigilant admissions office requires that every student have a reasonable quota of basic intelli-

gence. No one can be expert at everything, however, and one of the tackles on the football team was a trifle naive about literature. One day the professor read aloud to us the "Ode to a Nightingale." He was an excellent reader, and proud of his ability. When he finished, there was a hush. We were supposed to be impressed, and we were.

Finally the tackle held up his hand. "That was mighty fine," he said, "but you'll have to admit that for real poetry Keats can't compare with Robert W. Service."

The professor naturally shot him. The football coach was a little stuffy about it, but we survivors acquired a better appreciation of writing.

The truth is that the merely mechanical part of poetry is not as hard as it looks. For rhymes, all you need to do is look in the Vocabulary of Rhymes, in the back of *Webster's New Collegiate Dictionary*. Alliteration comes naturally. The human brain encourages it. After you have uttered one word beginning with "I," further words beginning with "I" jump into your mind more easily. And the rhythm comes in ready-made patterns.

Suppose you want to write a poem about—, well, about someone whose name is Ray. You simply hunt up a few rhymes that seem appropriate to Ray and his activities, and you fit them into your chosen pattern.

Maybe . . .

- - - - - Ray
- - - - - gay
- - - - - said
- - - - - bed
- - - - - risque!

It is a simple task indeed to fill in the blanks. (No implications about anyone who happens to be named Ray. It was just easier to select rhymes for a Ray than for an Ethelbert.)

There is another field in which writing that looks difficult tends to deceive. In his treatise on "L'Universalite de la Langue Francaise," Rivarol says the German philosophers often receive undue credit for profundity, simply because the reader has trouble figuring out what the complex German sentences mean.

This brings us to the matter of literary style. That question is one I am going to duck, because it is so nebulous—except to point out that the great masters of style obey the Phrase Rule. Read E. B. White, Wolcott Gibbs, Christopher Morley. As someone said of Morley, they write as easily as the rest of us breathe. At least, that is the way their writings read. But the minute number of such masters proves that work like theirs must be difficult indeed.

Science Writing

It is now time to consider science writing—writing about science for the public, in newspapers and other printed media. Television is out of this discussion. On television, what

you hear is far less important than what you see. Even in the case of a speaker, it is not his words that matter; it's how much and what kind of powder he has on his face.

Does science writing also obey the Phrase Rule? Certainly it is not in fact easy. Can it be made to seem easy? It probably can, if we include one reservation, suggested by Paul Block, Jr., F.A.I.C., professor of chemistry at the University of Toledo, in Ohio. Dr. Block is qualified to talk about writing; in addition to his job as chemistry professor, he is the publisher of the *Toledo Blade*, one of America's leading newspapers.

He says that some scientific concepts can be translated into layman's language; some can not. We might as well give up, for example, on Einstein's general theory of relativity. Beyond a certain point, the only appropriate language is mathematical symbols. Or chemical symbols. When scientists are talking to each other, they are practicing mainly their own professions, not writing. Even so, they need editorial help—little though most of them realize this truth. At Whiting, Bob Marschner has a committee that might be called the Committee for Improving Technical Papers and Infuriating the Authors.

Our concern is the scientific subjects the public can understand. Are they now being clearly explained? Every year the American Chemical Society charges its Grady Award

jury to examine the current crop of science writing. Now that my term is over, it is lawful to admit that at one time I was on that jury.

Most of the science writing turned out to read as if the writer were a swimmer, buffeting the waves in a heavy sea, far from a shore where all the people were busy at beach picnics and so paying no attention to him. There was frequent reason to fear that he had given up and had drowned. Days would pass without his byline in the papers. Yet the continued existence of that poor devil is important to those people at the beach picnics or the ball game, even if they do not realize it. The science writer hopes, if he survives, to increase the public stature of scientists. And unless scientists become as important to us as ball players, we might as well start learning to speak Russian.

What can be done to help these interpreters of science? With respect to many of them, nothing. They don't have it. They can never become good writers. They can never learn to obey the Phrase Rule. The good ones can do certain things to help themselves. A science writer can follow the same course a wise chemist follows. He can make sure his work is appraised by experts—in our case by other chemists, in his case by editors.

He can avoid jobs where his writing will be appraised by business men. Executives in industry often have great ability, but the ability to ap-

praise writing is practically never present. If it were, the writing in advertisements would be better than it is. The head of an advertising agency may or may not be able to appraise writing, but he is safe in assuming that his clients cannot. So, why should he spend the money it takes to hire good writers?

In the course of the past 15 years, a mile-high stack of copy, from three giant agencies, has come across my desk for review. In it all I detected the work of only one writer who deserved to be called a professional.

No matter how wisely the science writer selects his employer, he will have a tough time. Let us suppose he works for a newspaper. There is legitimate question how much a good job in that spot is worth to the paper. This is partly the result of a vicious circle. The paper assumes, with some reason, that people are not interested in reading about science. So it puts a mediocre writer on the job. His writings naturally excite no one. Convinced more than ever that the readers care little about science, the paper reserves its good writers for other fields. The vicious circle continues.

Even an E. B. White of a writer about chemistry and chemists would have a smaller audience than the writer about sports or about movie stars. His work would sell fewer newspapers. So, he cannot be paid very much. Meanwhile, what happens

to a reasonably able non-science writer? The income of Alexander Woollcott was once reported in a *New Yorker* profile. Woollcott is a good example. He complained that he had developed a perfect writing style and now found he had nothing to say. I do not endorse even his style, but his income was reported as being \$70,000 a year, in the 1930's.

If a science writer is any good as a writer, and yet sticks to his discouraging field, he must be a dedicated person, one who is trying to help his fellowman.

What can we chemists do to assist him? The biggest thing is to give him material, something to write about. But to work with him effectively, we should try harder to understand him and his problems.

Be patient with the science writer when he displays ignorance of what seems to you the simplest scientific fact. Remember that writing alone is a tough profession, even when the writer knows what he is talking about. Remember that the science writer must write about biology, physics, medicine, geology, astronomy, and mathematics, as well as about chemistry. How many of us could do that?

Paul Block tells about the meeting at which the story of the atomic bomb was revealed to an assemblage of newspaper men. After the prepared talk, the speaker invited questions. There were none. The speaker was glad he had covered the ground so

well, but he felt surely there must be one or two questions. Finally, an editor held up his hand. He was a big, commanding man, an important figure in the newspaper world. What he said now, in a timid voice, was, "Please, sir, what is an isotope?"

Be patient when the science writer does what you regard as violence to your story . . . when he simplifies . . . when he deletes your qualifying statements, which seem to you so necessary for scientific accuracy. Those qualifications really make for inaccuracy, as the message reaches the reader, because they confuse him. Think of the reader.

Be patient when the writer tries desperately to find a way by which your basic, long-range, long-haired research can be tied into the reader's present interests.

Remember, too, the limitations of the writer's medium. At the recent national meeting of the American Chemical Society, the Science Writers had a dinner. The speaker was Henry Eyring, one of our greatest scientists and also one of our best translators of science. He told about his new scheme for explaining liquids: A liquid is a substance with the molecules the same distance apart as in the solid. Only, you have reached into the solid and pulled out every tenth molecule, and put it in the vapor space overhead. Where you pulled out the molecule is now a hole, which moves about. This explains the mo-

**ROBINETTE RESEARCH
LABORATORIES, INC.**

*Industrial Research • Consultation
Technical and Economic Surveys
Product Development
Chemical Market Research
16 East Lancaster Avenue*

Ardmore, Pa. Tel. Midway 2-6457
Member Amer. Council Ind. Labs.

bility of the liquid, and why most solids increase in volume when they melt. Dr. Eyring presented other simple, graphic ways of thinking about physical chemistry.

Nate Hazeltine, of the *Washington Post*, was the toastmaster. He thanked the speaker and said, "We have enjoyed learning how to explain chemistry. But how do we write this: (hand motions)?"

The pen is said to be mightier than the sword. Is the pen also mightier than the test tube, the modern replacement for the sword? To commit a slight case of sacrilege, is the Phrase Rule more important than the Phase Rule? That question is one we ought not even try to answer. We need cooperation rather than comparisons. Professor Muller, the Indiana University winner of the Nobel Prize, says the two key ideas for the future of the human race are intelligence and cooperation.

In the AIC our party line has always been that chemists have to be intelligent. If they can smooth the way for intelligent writers to work with them, it will be at least one big,

important stone in the foundation for the future.

I am now going to read a poem. It is a poem with a purpose. As an unwilling little boy in church, I noticed that when the minister read a poem he was at the end of his sermon. That

was always good news. The purpose of this poem is to let you know that I have reached the end of my paper. It goes:

Pity the plight
Of guys that write.
Admire and praise
The simple phrase.

Chemist-at-Large

Dr. Robert F. Marschner

*Assistant Director, Communications Division, Standard Oil Company (Indiana)
Whiting, Indiana*

*(Presented when Edward L. Gordy, F.A.I.C., received the Honor Scroll Award
of the Chicago AIC Chapter, October 11, 1960, Chicago, Ill.)*

MY first contact with Edward L. Gordy was at a distance. I had written a paper for presentation at a national meeting of the American Chemical Society. At the suggestion of a superior, I sent the manuscript to Ed, who had just been employed as assistant to the general manager of research and development, for his comments. The manuscript came back, not a week later with a note, "Sounds good to me," which is what one usually gets from his ordinary associates, but in twenty-four hours with some 200 thoughts: incisive corrections to sequence, wording, punctuation; succinct queries as to purpose, alternatives, emphasis; and marginal comments that pointed up all the weaknesses that I thought I had cleverly hidden by omission or misdirection. One of these comments was a Gordy trademark—opposite the most redundant and least significant sentence in the terminal section was written the

single, deservedly sarcastic, French word, "Merveilleux!"

I met Ed a few months later on the tennis courts. He is rather a stylist in tennis. A conventional but rather high-bounding service; a sharp forehand that always looks so deceptively the same that only the ball knows whether it was topped or chopped, and a discouragingly steady backhand, especially in returning balls hit hard to the far right corner. I can hardly imagine a more worthy opponent on a warm spring afternoon in Indiana. He beat me in straight sets: 6-3, 6-2.

Having thus been bested in my first two encounters, one mental and one physical, I thought it well to look into Ed's background. Four people were primarily responsible for his unusual combination of athletics, writing, and chemistry.

The first person was his father, who was superintendent of schools in various towns in Pennsylvania, among

them Danville, where Ed was born, and Chambersburg, where he went to high school. There, Ed wanted to take the scientific course, which required four years of science, but his father "suggested" that he take the classical course, which required four years of Latin. So Ed took the classical course. But by taking extra courses he got in three years of science. His extracurricular activities in high school were just what you would expect: He successfully manufactured mercury fulminate and he equally successfully edited the class yearbook.

The second person was an unknown admissions officer at Haverford College, where Ed earned a scholarship on the basis of his grades on College Board examinations. To be enrolled as an A.B. candidate would require making up a Latin course not even offered at Ed's high school, in which case the scholarship would not be honored at Haverford. The admissions officer slyly revealed, however, that, as a B.S. candidate, not only would no makeup course be necessary, but also the scholarship would be honored. How sharp and distinct are the logical decisions that lead inexorably towards careers in science! So Ed enrolled as a B.S. candidate, and amply justified the decision by earning Phi Beta Kappa in his junior year.

Again, extracurricular activities played an important role in the making of a career. Writing was repre-

sented by the college newspaper. Athletics was represented by the Haverford cricket team, which visited England and participated on the playing fields of Eton, Harrow, Rugby, Marlborough, Charterhouse, and the rest of the public schools. For the most part, the English cricketers were too good at their own game; Ed won the best-bowler trophy for the visitors, while advancing the cause of international relations by improving the season's batting averages of the home teams. Chemistry was represented by a prize in the junior year and a fellowship to Harvard upon graduation.

The third person was E. P. Kohler of Harvard, one of the all-time great among chemistry teachers. Graduate study was then in transition. At Harvard, Baxter and Richards were working on more chemical atomic weights; Conant and Kohler on more nitrogen ring compounds—the really exciting times started about five years later. At any rate, Ed decided that research was not his interest. Kohler concurred, saying, "Anyone who has training in chemistry and is six feet tall should be good at plant work." How much simpler was his system than going through a gamut of ability and personality tests!

About that time, the fourth influence came onto the scene: Robert E. Sherwood, then editor of the old *Life* magazine. Ed submitted a piece to Sherwood and, to his surprise, received in reply a pencilled note in-

stead of a printed rejection slip. The next piece Sherwood bought. A little later, he said Ed could make a living as a writer.

The net result of influences and circumstances was to produce the makings of a scientist unusually well educated in the classical tradition. To defend that thesis, I will apply the test of the three qualities of an educated man to later events in Ed's life.

First is the capacity to master a subject. The knowledge and desire to get right inside a subject and like it is by no means universal. It is the mark of the student and the researcher.

Second is the capacity to undertake a different task. The courage to attack a new job for which one is not already equipped, and the confidence to walk upon unfamiliar ground, are scarce. They are the marks of the explorer and the discoverer.

Third is the capacity for effective communication. The knowledge and the intensity needed to transfer ideas clearly and efficiently to others is rare. It is the mark of the master teacher and the renowned author.

Ed's first job in industry was with Pilot Laboratories, subsidiary of General Mills. He was put in charge of a plant for making new peroxides for bleaching flour; the plant was so successful that competitors bought out the company. His second main job was editor of *THE CHEMIST*. His third job was director of research and

development for the W. C. Hardesty Company, Dover, Ohio.

Writing for the *New Yorker*, the *Saturday Evening Post*, and various lesser magazines occupied much of Ed's spare time. He was president of the Tuscarawas County YMCA, chairman of Netawotwees Council, Boy Scouts of America, and public relations director for the Community Fund and the Red Cross.

What Ed really wanted, though, was a job that combined chemistry and writing. The trouble was that he has been about a generation ahead of his time. With the thought that the need for such a combination should exist in a large company in a highly technological industry, he accepted a position with Standard Oil Company (Indiana). Over the years, the combination has crystallized into a sort of public relations pattern, partly because television has improved so greatly upon the movies as a technique for joining words and pictures in communication, and partly because Russian emphasis upon science has made it a popular subject in the United States.

Ed's activities at Standard on behalf of a better image of chemists have been many and varied. He helped develop and produce a series of institutional advertisements that emphasized the chemist. He was the ghost writer for several technological speeches presented by officers of his company, and his fine hand contributed to the struc-

ture and polish of many more. He was technical director of several industrial movies, notably "Gasoline's Amazing Molecules" and "Lubricating Oil's Amazing Molecules." Both, by the way, presented an appealing, branched-chain, oil molecule in the shape of the Shmoo, long before Al Capp found them in Dogpatch, and economics teachers adopted them for case studies.

Perhaps the most familiar recent product of Ed's abilities was the television series, "Spotlight on Research." Kinescope films of most of these live broadcasts were made, and some have been in much demand among high schools. This and other ventures into television have been tremendously revealing in defining the limits of possibilities and demands for science programs.

He has been chairman and mainstay of the Chicago Chapter of the AIC, and long time director, editor of the *Chemical Bulletin*, councilor, and best public relations man in the Chicago Section of the ACS. He is first vice president of the Chicago District Tennis Association, and vice president of the Chicago District Squash Racquets Association.

Chemistry would be a different and finer discipline if more of us were like Ed. And I do not mean only that we would work more intensely on things that are harder, and learn more about subjects that are not on the beaten path, and do a less-sloppy

job of telling ourselves—let alone others—what we have done. I am thinking about the longer-range consequences: With broader knowledge and less complacency, we would plan more surely and get ahead ten times faster. With better communication, we would have no publications problem, and the barriers between fundamentals and applications, between knowledge and teaching, and between the sciences and the non-sciences, would be ten feet lower. With more time spent on the courts and less time blinking at sports on the screen, we would weigh ten pounds less and have ten points better vision! . . . I had better quit before I hear the familiar, "Merveilleux!"

Presentation of Honor Scroll to Edward Gordy

EDWARD L. GORDY, F.A.I.C., communications coordinator, research and development department, Standard Oil Company (Indiana), Chicago, Ill., received the Honor Scroll of the Chicago Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, at a dinner held in the Furniture Club, Chicago, October 11, 1960.

Dr. Austin B. Wilder, chairman of the Chapter presided. Dr. Robert F. Marschner, assistant director, communications division, Standard Oil Company (Indiana), spoke on "Edward L. Gordy — Chemist-at-large."

The Honor Scroll was presented by

Dr. Johan Bjorksten, AIC president-elect. Mr. Gordy responded with an address on "The Phrase Rule." (See preceding pages).

The citation on the Honor Scroll reads:

To Edward L. Gordy

For exceptional achievements in the field of public relations on behalf of chemists and their profession . . . for effectively demonstrating by precept and example how the versatile scientist can win the understanding, recognition and cooperation of his fellow citizens.

Dr. Peter J. W. Debye, F.A.I.C., professor emeritus, Cornell University, Ithaca, N. Y. and Nobel laureate, has been chosen to receive the Nichols Medal of the New York Section of the American Chemical Society.

Howard Rosenthal, F.A.I.C., of Schaar and Company, 7300 W. Montrose Ave., Chicago, Ill., is president of the Chicago Technical Societies Council.

PHOENIX

CHEMICAL LABORATORY, INC.

Fuel & Lubricant Technologists

Chemical Tests • Physical Tests

Qualification Tests

3953 Shakespeare Avenue
CHICAGO 47, ILL.

Dr. Roger Adams, Hon. AIC, research professor emeritus, University of Illinois, received the Franklin Medal of the Franklin Institute, Philadelphia 3, Pa., October 19. The citation reads:

"In recognition of his many contributions to the science of organic chemistry, particularly his widely useful method of catalytic hydrogenation, his comprehensive investigations of alkaloids, and his systematic studies of molecular structure; and because of his eminent achievements as a teacher, as an author and editor, and as a leader in the professional organizations of science."

Dr. Lawrence Flett, Hon. AIC, was chairman of the "American Day," part of the XXXII Congres International de Chimie Industrielle, held in Barcelona, Spain, Oct. 26. Participants in the discussions included, **Dr. Emil Ott, F.A.I.C.**, **Richard L. Kenyon, F.A.I.C.**, **Raymond G. Brown, F.A.I.C.**, **Prof. Eugene G. Rochow, F.A.I.C.**, **Dr. Robert S. Aries, F.A.I.C.**, **O. B. J. Fraser, F.A.I.C.**, **Dr. Alfred Lachmann, F.A.I.C.**, **Dr. John H. Nair, F.A.I.C.**, **Prof. W. George Parks, Hon. AIC**, **Hillary Robinette, Jr., F.A.I.C.**, and **Roger Williams, Jr., F.A.I.C.**

Dr. Charles E. Feazel, Jr., F.A.I.C., of Southern Research Institute, Birmingham 5, Ala., is chairman of the Alabama Section of the American Chemical Society, which, with other local Sections of the ACS, is holding its Southeastern Regional Meeting in Birmingham, November 3.

Frank Words on Contract Counsel and Research

Raymond Stevens, Hon. AIC

Chairman, Executive Committee, Arthur D. Little, Inc., Cambridge 42, Mass.

(Mr. Stevens prepared this essay to summarize his observations during 40 years in the consulting field. He hopes it will be useful to other consultants and their clients. It is copyrighted by Arthur D. Little, Inc.)

CHANGE in corporate life is inevitable—one is either its creator or its victim. To initiate and participate in change have been the driving forces of the consulting research organizations that have grown up in the last forty years. These changes have been so continuous in both Arthur D. Little, Inc., and its client-market that I should like to explore some of the philosophy, policy, and motivating force of my organization. It is hoped that a look at our experience from the perspective of four decades might be useful to others who may be consultants or their clients.

Managements have changed, moving steadily toward more professionalism, greater use of trained staff specialist aids, deeper study of problems, better briefing for decisions. Contract research, too, has changed. It has expanded from quality control to product and process development, to discovery of new scientific knowledge, and finally to top policy assistance based on research. Today managements are coming to regard research organizations as staff counsellors.

In 1920 the best-known manage-

ment consultant had a published manual of methods and practices to apply to any and every client. Today each major managerial problem is unique and requires research with a careful tailoring of the solution to the particular situation. Ready-to-wear consulting clothes no longer give acceptable fit. Increasingly there is a technical base to recommendations—the handling of data by highly developed methods, the due consideration of competing trends, the effect of anticipated technological development, the changing aspect not only of markets but of whole industries.

One of the most striking developments of the last forty years has been the growth in the use, acceptance, and understanding of research throughout our entire economy.

Today there is hardly a company or partnership in industry, business, or banking that cannot and does not use or feel a need for some aspect of research. Because research is better understood today as a result of this increased experience, it is easier for consultants to help clients. Yet, there are still many managements that have not brought into top executive levels men at once competent in policy de-

termination, yet thoroughly versed in research and steeped in the technology of their industry. The companies that have found the right men have profited handsomely, and there is a noticeable increase in the percentage of top administrators grounded in technology.

There is still inadequate recognition of the function of growth and change at the policy level. In 1950 I made a plea that management appoint an executive concerned with the future to supervise this whole area of the company president's responsibility. The general reaction from the audience of research administrators was that a superman was proposed. Since then the number of executives who are versed in science but understand management's problems have increased noticeably. Research departments are subjecting themselves to a careful examination of their purpose and their adequacy. Early in the search it generally becomes apparent that the all-essential question is, "What place has research in the management hierarchy—is management itself properly set for effective use of this powerful tool?"

Increasingly organized research is being recognized as applicable to all areas of activity, as compatible with, even indispensable to, sound decision-making in the rapidly changing industrial setting. This gradual change in recognition and in relation to entrepreneurial leadership has been one

of the most satisfying experiences in ADL and other long-established research organizations.

Outside research can help the ambitious, vigorous company achieve its objectives. "Find out where people want to go and help them get there" is a simple formula for successful consulting research. This philosophy has been pertinent and helpful in shaping our company policy and practice during my forty years in industrial consulting. It has been a satisfactory philosophy to live and work with.

What is Research?

An associate has described research as, "the method used to solve problems . . . the scientific method." He enumerates the steps involved in research as: (1) A problem that produces an "itch" to solve it in the mind of a scientist with appropriate knowledge. (2) A leap to a generalization to explain the problem. (3) Experiments designed to test the validity of this hypothesis and to modify it as findings dictate. Many management activities are more effectively done today because this method has been extended beyond the physical sciences to deal with administrative and other social situations in many areas of industrial and commercial activity.

Research cannot work miracles, though at times the results may seem to belie this statement. In skilled and experienced hands, however, it can become a powerful aid to manage-

ment. An impressive array of highly developed tools and techniques permits the research man to order the multitude of facts that are frequently necessary to decision-making on administration and technical levels. Imaginative interpretation of these facts generally produces a satisfactory solution to problems as varied as the recovery of raw materials, transportation, development of new products, production, marketing, sales, even advertising.

For such results, however, certain elements must be present. One of these is the proper or adequate question to be asked. Solving the wrong problem cannot help anyone; skill and sensitivity are necessary to frame the appropriate question. Time is another essential ingredient. Research is not performed in minutes, nor is the intuitive leap achieved in a flash without prior cogitation and involvement. Time is also necessary between the completion of research and the realization of the payoff of the results. Creative imagination and broad experience have proved requisite for the most effective solutions to specific problems.

What the Client Brings

At one time I made the discovery that we have usually worked for companies that were going places, that had the speculative and creative instincts and desires necessary for going to those places, and, of course, that had the basic foundation of organiza-

tion and funds to accompany them. These are the most important elements that a client can bring to a consulting research relationship for the greatest chance of success in that joint endeavor. For research necessarily means change, and without the desire to go places, the wherewithal to get there, and a strong speculative and creative urge, clients can rarely make the best use of their work with a research organization.

On the other hand, we found years ago that incompetence on the part of a client was a prime danger signal. Contrary to an opinion once held, good consultants in any field are not supported by weak, incompetent clients. The reverse is true. Consultants cannot substitute for competence in top management.

The ideal client also knows that research is not magic. He recognizes that we must work to help him, that he must work, and most of all, that there must be a condition of mutual trust so that both parties can work most effectively. When the client has the ambition to accomplish some objective, he is also willing and even desires to take some chances, if he has confidence in our assistance. Some of our greatest successes have been due to the client's complete confidence in our staff, with the result that we have been allowed considerable freedom in our approach to a problem and have been able to carry it out in the most efficient and most successful

way. We, on our part, have generally striven to achieve a partnership of professional men who look primarily to clients as their bosses.

The situation is lopsided, however, if the client wants us to implement our findings. When our work is done and the client is presented with the results of our research and with our recommendations, he must be prepared to do his share of the work to realize the benefits of this relationship. He must then take the leadership to put into effect the results he has obtained.

Change is indeed the basic element in any research we do. Any solution we may come up with will mean change of some magnitude to the client. We have found that management frequently does not want change, for change can be threatening and disturbing. Blindness to the need for change is most dangerous. Good management realizes its inevitability and capitalizes on it.

Another serious situation arises when a client seeks assistance with recognition that he needs something new without foreseeing the implications of what this change will mean for him and his organization. Then a consultant may meet the disappointment of seeing his results wasted because consequent change could not be accepted; or, worse, the work can be misinterpreted and deprecated subconsciously to protect against its consequent change.

Change is a positive step in some

direction. When management is so flexible that it can accept the new situation and build innovation into its long-range plans, then change will be growth opportunity and a step forward. And management will be determining the direction and managing change. The petroleum company that develops plastics, the automobile manufacturer that senses a trend toward smaller cars and incorporates—or develops—new engineering, the chemical company that successfully adapts its products to space age fuel needs, all these are calling their own shots and are not victims of others' initiative.

What the Consultant Brings

One of the most important contributions an outside research group makes is that of stimulation and sometimes irritation. We know of no defined threshold where stimulation stops and irritation starts. Usually the terms are synonymous, and whether an outsider stimulates or irritates, more constructive action results from his presence. He prevents smugness. Whether a consultant stimulates or irritates, the per cent of research budget spent on outside assistance leads to such increased productivity from the remaining balance, that the balance alone usually produces more than would the whole budget spent internally.

Necessarily an effective research consultant has a breadth of experience from having served many clients in

many situations. While this may make it difficult for him to be a specialist, it makes him the better able to serve a client, for his experience enables him to see a problem more clearly and in a newer way than does the client. A recent survey showed that many businessmen want to hire the expert in the field. Expertise is frequently a necessity. But a breadth of experience is equally essential, and the two should, generally, be combined by selection of a team to work on a problem. The man of broad experience should be the team leader with the experts to contribute their knowledge in the solution of the team's problem. Specialized knowledge has high obsolescence risk.

It is out of this breadth of experience that research groups can make one of their most important solutions—that of assisting in focusing the problems more clearly. Frequently a prospective client cannot formulate the true statement of his need. A client often comes, for example, with a request for a new product or for assistance in diversifying, when closer examination indicates that before either course can be taken effectively, he must make better use of his own resources or perhaps solve internal problems not immediately apparent to him. We have been asked by research directors, presidents and by board chairmen to review their research programs because they were not satisfied with their results. All

too often we found that it was top management that was the roadblock to more effective use of its research activities.

Once the effort is focused on the right issues, the assignment must be worded as the research project leader understands it, with great care and in sufficient detail so that he can agree upon it with the client and have it accepted in that form. Such care at the time of the acceptance of the assignment and certainty that there is a mutual understanding reduce significantly the misunderstandings that otherwise may develop in the course of the work.

It is axiomatic that a consultant must be able to work with people; this is especially true in the delicate initial discussions when the problem is being focused. In a staff conference on a troublesome situation resulting from a client's difficult personality and actions, an engineer pounded the table and said, "I am beginning to find that the trouble with engineering is that you have to deal with people." It is the trouble and the joy of consulting.

Enthusiasm for a client's objective is all important. Without enthusiasm for a client's real objectives, the consultant should not accept the assignment. Since the client may be interested only in finding out whether or not a project is feasible, he does not want the consultant to feel that he is foolish in considering a project unless

it is so obviously unwise that a sound research man should not undertake the assignment. A consultant, in brief, must have an honest interest in the client and in the things he is trying to do. An individual who is not interested in industrial and commercial accomplishment may find it difficult to serve in the consulting field. But acquaintance with men who are doing things industrially, commercially, and in civic fields will gradually develop an enthusiasm and understanding for their objectives and an honest desire to help achieve those objectives by using the tools with which consulting staffs are familiar.

All consultants of maturity and stature are known for high professional integrity. Our company's inheritance from Dr. Little, in addition to his name, has been primarily philosophical, ethical, and professional. We have not dared, had we wished, to stray from the professional standards and practices he set. At times it has taken courage to speak bluntly and frankly to clients in their interest, to refuse attractive assignments where there was hazard of conflict of their interest, and to avoid rationalization of questionable steps and procedures. A consultant protects his clients' interests and goes to great lengths to do so. It is equally important that his reputation for clear, straight thinking and speaking be unchallenged.

Forty years have seen a gradual,

constant change in the meaning as well as the use of industrial research and research-based professional activity. Initially limited essentially to a narrow portion even of the field of physical science, industrial research and research-based management service have spread to the whole area of industrial activity. ADL has grown and diversified with it, has even caused or accelerated some of the growth and diversification, until now it comprises a staff available to modern management in almost every phase of its activity—with its engineers and scientists matched by equal numbers of business research professionals—economists, market men, experienced administrative and organization consultants, data-handling pioneers, and operations research men. We enter a new decade geared to the use of current sophisticated methods in a rapidly changing environment. The use of internal and external staff work by management has grown greatly in volume and complexity. But ADL's basic philosophy is still the simple one of "finding where people want to go and helping them get there."

THE LENTO PRESS, INC.

Distinctive Printing

441 Pearl Street New York, N.Y.

WO 2-5977

Communications

Wanted Article on the Public's Responsibility to Scientists To the Editor:

Referring to the article by Andrew H. Hines, Jr., in the October issue of *THE CHEMIST*, may I say that I for one am getting sick of reading constantly about the responsibilities of chemists and engineers. If a shortage of either or both is threatening, the responsibility, in my opinion, is not ours. To lure young people into our profession, make it so attractive that they will stand in line begging to join us. This seems to be to be the only sound and lasting solution of the problem.

Won't someone some day write an article on the responsibility of our fellow-citizens to chemists and engineers?

—Dr. Otto Eisenschiml, F.A.I.C.
Chicago, Ill.

Note: *THE CHEMIST* will welcome a good article on this subject.

On Political Articles To the Editor:

My old friend, Bernie Schaar, told me at our last Council Meeting that I should not introduce national politics into the deliberations of that august body. Perhaps he was correct. On the other hand, both candidates in the coming election seem to feel that the future of all of us—and that includes members of the AIC—de-

pends on which party is chosen in November.

Last May the Governor of Minnesota was invited to talk before the AIC national meeting in Minneapolis. He did so and I am told he gave a splendid political talk. His address was published in *THE CHEMIST* in the June 1960 issue. As a former president of the AIC, I would like to make a few comments:

- (1) I don't believe the best solution of our educational problem is to increase taxes and spend more money. I do believe that if we cut out how-to-do-it courses, i.e., folk dancing, feather bedding, etc., we will have plenty of money with the funds we now have to give a sound basic education to all of our youth who want an education.
- (2) I don't believe that our "aged" members want to be on relief and be given a handout by a local "Commissar." I do believe "us antiques" want to be productive and be encouraged to earn our own living as long as we are able; something that is not true today.
- (3) I don't believe that this nation or any nation can learn how to live peaceably with any other nation whose leaders have no respect for God or for their fellow men. I believe that we should first win the present "cold war," before talking about winning a peace which does not exist. Furthermore, I believe that "offense is our best defense."

The ACS permitted the chairman of the New York Committee for special Democratic Projects to publish in *C & EN*, Aug. 29, 1960, a political article in which he complained that certain officials of a few companies

opposed some of the proposed excessive handouts and further that these officials expressed themselves politically. He remained silent about certain labor leaders who use union funds without membership consent to lobby for these same excessive handouts, thus expressing themselves politically.

The other evening a former president of the AIC, an old friend of mine, predicted the outcome of this election as follows, "It will go to the candidate who offers the biggest hand-out." I disagree. The majority of voters are not that naive. They know that the next President regardless of party will not spend his money but theirs.

—Dr. D. B. Keyes, F.A.I.C.
New York, N. Y.

Should Basic Research be Required?

To the Editor:

The article, "Research on Research," in the September issue of *THE CHEMIST* presents a common confusion often found in modern literature, namely, that involving the complete separation of the corporation citizen from the human citizens employed by the corporation citizen. Thus

"The people whose judgment we sought were the directors of research of the 33 top United States corporations. While this may appear at first thought to be a small sample, these men among them control the allocation of about one fifth of all the basic research funds of the nation."

The allocation of corporation funds

for basic research is an act of the corporation and not an act of the individual directors of research. It is a corporation decision to do or not to do basic research and not the decision of the directors. The director of research, in other words, acts in the name of the corporation. Research decisions as to allocations of funds are corporation decisions. Surely if the president or some other responsible officer of the corporation would not sign his name to permit the allocation of funds, there would be no basic corporation research.

It is conceivable that more than one director of research has pleaded for corporation funds for basic research, only to be denied such funds in spite of the director's wishes, desires and fervent belief in basic research.

If chemical corporations of a certain specific capitalization were required by law to do basic research, this might be helpful. In short, before a chemical corporation would receive approval of its articles of incorporation filed with the Secretary of State of one of the fifty United States granting the incorporation, agreement as to such research should be present in the articles of incorporation as filed.

Alternately, the laws of incorporation should be Federal Laws; thereby avoiding the practice of shopping the fifty States for that having the easiest incorporation laws, such as Delaware.

—Dr. Frank Makara, F.A.I.C.

Professional Affairs to be Discussed

A Panel Discussion on "The Working Chemist and Professionalism" will be held, Nov. 21, at the general meeting of the Lackawanna Subsection, North Jersey ACS, in conjunction with the Professional Affairs Committee of the North Jersey ACS Section. Panel members are: Dr. Sidney M. Cantor, F.A.I.C., Dr. H. H. Fox, Dr. W. E. Hanford, Hon. AIC, and Dr. William Rieman III.

Dr. Max Bender, F.A.I.C., who is secretary of the AIC Committee on Central Planning and chairman of the Professional Affairs Committee, ACS North Jersey Section, will serve as moderator.

The following questions may be considered by the panel:

- (1) The question of merging the AIC with the ACS. What are advantages, pro and con?
- (2) Granting advantages to the AIC existing independently, how bring about growth of the AIC so that it can be more effective in carrying out the chemical professional ideals for which it stands?
- (3) Why doesn't the industrial position, "bench chemist," seem to hold much appeal in general, to people whose academic training has been in chemistry? Can a union improve the status of "bench chemist?" Can a professional society bring this about? What is the actual opportunity situation in terms of recognition and remuneration for those industrial chemists who prefer chemistry study and bench work?
- (4) What about some discussion to clear the air of "evil unionism

connotations," when a group or society forms to more effectively present the viewpoints of individuals therein.

- (5) What can or should be done in college and university that would give greater desirability to the industrial position "bench chemist?"
- (6) Should there needs be a conflict between management and chemistry research workers employed by management?
- (7) Would it be worth while for management to devote more time and money for science fundamentals? If so, can the university help management see this viewpoint? If not, by whom should such fundamental study be made and who should pay for it? Who should benefit from it (besides the country at large)?
- (8) Perhaps there are very few people qualified to do decent work in science. If this is true, what should be done about the matter, especially in the face of the competition with Russia?
- (9) There is the matter of the usefulness of a "bench chemist" as a function of his age. It is true that youth has a great gift of imagination which he may be losing as he grows older, but as he pursues his profession diligently, he should be maturing with age and become more valuable as time goes by. What are the compensations for his experience? Often, older individuals, but far from ready for retirement, cannot even find a position. What can professional societies do to alleviate this apparently wasteful situation?
- (10) In the light of Question 9, discuss the issue of security as manifested through medical, pension and tenure plans. Should one's pension fund be transferable? Should not there be a reasonable amount of job-changing by virtue of the advantages of cross-fertilization?
- (11) How does one look at the law of supply and demand as applied to

the hiring of chemists? Why is there a shortage of the individuals fresh out of school? But in 3-5 years they seem to become glued to the market and perhaps even a glut on it.

- (12) Industry needs dedicated workers in science at the bench, much as they are found in the university and in foundations. What should be done to increase the number of such dedicated science workers in industry?
- (13) Comment on the double ladder plans now in operation in quite a few companies. Are they successful? Is it realistic to consider a person as either administrator or researcher? Are there no combinations?
- (14) What about classifying industrial scientists along similar bases as in the university, i.e., Full Professor, Associate, and Assistant, etc.? This would tend to standardize professional chemists according to their maturity and to simplify the hodgepodge of industrial position appellations as they now stand.
- (15) What in your estimation is the most effective manner of holding a meeting or convention pertaining to the professional welfare of the chemist?
- (16) What about the caliber of the people entering college to study chemistry? Does chemistry receive a good share of the bright people of the country? How can we induce the greater enrollment of brilliant people, if not through the promise of a good probability of a worthwhile career?
- (17) Why is it that only about 50% of the American chemists are members of the American Chemical Society?

Members of THE AMERICAN INSTITUTE OF CHEMISTS are cordially invited to attend this meeting and to participate in the discussion. (See page 422).

Opportunities

Doris Eager, M.A.I.C.

Chemists Available

Chemical Engineer, F.A.I.C., over twelve years experience in development, project engineering and technical service. Seeks responsible position with progressive company in N. Y., N. J., Conn. area. Box 112, THE CHEMIST.

Positions Available

Electrochemist. Electrochemical development company. Research associated with fuel cells. Ph.D. preferred, with strong background in catalysis or solid state physics. Greater Boston. Salary open. Box 111, THE CHEMIST.

Research Engineers. Plastics manufacturer, molding powders and molded articles. Extensive experience in research or production of styrene, nylon, and derivatives. Eastern Mass. Box 113, THE CHEMIST.

Paint Chemist. Research in new products, new uses for standard products, basic research in paint vehicles. B.S. 1-4 years experience. Greater Boston, Box 115, THE CHEMIST.

Physical Chemist. Established space-age organization. Physical chemistry. Man should be more academic than product minded. Boston. Box 117, THE CHEMIST.

Senior Marketing Executive. Inorganic chemicals and metallurgical products. Successful marketing and sales management experience; be a strong leader and personal salesman as well as a professional administrator. \$20,000 plus incentive earnings. Box 119, THE CHEMIST.

LABORATORY SERVICES

for the

FOOD and DRUG INDUSTRIES



DRUG EVALUATION,
FOOD ADDITIVE STUDIES,
CHEMICAL ASSAYS,
BIOLOGICAL ASSAYS,
CLINICAL STUDIES,
RESEARCH

LAWALL & HARRISON

Box B 1921 Walnut St. Philadelphia 3, Pa. LO 3 4322

"In the Service of Medicine and Mankind"



THE new Medical Research Laboratories of Chas. Pfizer & Co. Inc., under construction for two years at Groton, Conn., were formally dedicated, October 6.

Over a thousand physicians, research scientists, educators, pharmacists, diplomatic representatives from Europe, Africa, Latin America, and Asia, and executives of the pharmaceutical industry, attended the ceremonies.

Speakers included Dr. John E. McKeen, Hon. AIC, president and chairman of the board of Pfizer; Dr. Jasper H. Kane, F.A.I.C., director and vice-president of research and development; the Hon. Abraham A. Ribicoff, Governor of Connecticut, and Dr. Irvine H. Page, director of research at the Cleveland Clinic Foundation, who is noted for pioneer researches in the fields of brain chemistry, hypertension, and arteriosclerosis. Dr. Ernest M. Weber, F.A.I.C.,

executive director of research and development of Pfizer, presented Dr. Kane, who introduced the speakers.

The beautifully modern, three-story research laboratories are located on a 19-acre, landscaped site near the ocean. The large quadrangular West wing contains 19 chemistry and 11 biochemistry modular laboratories, each independently serviced with utilities. The major departments here are physical measurements, bio-assay, macro-analytical, phytochemistry and chromatography, chemistry, fermentation and kilo laboratories. The East wing contains the microbiology department with laboratories for studies in behavioral pharmacology, renal pharmacology, neuro-pharmacology, endocrinology and enzymology; the administrative offices, the technical library, patent, personnel and other sections.

Dr. McKeen reminded the audience that, "Medical research cannot

be made visible as an entity confined within buildings and institutions. The outward apparatus of research is naturally most conspicuous in a laboratory such as we are dedicating. Costly instruments of marvelous accuracy which probe into the inner structure of molecules of living systems do excite imagination and admiration. But mere equipment can never guarantee progress or insure that research efforts will be successful . . . tools are but extensions of men's hands and minds and capabilities.

"Much more than materials and buildings are needed. The environment must be one which stimulates and sustains the innate creativity of vigorous, productive minds. In every man there is a God-given spark of nobility which has its highest manifestation in the hope that his work . . . shall be of help to his fellow men . . . A climate which affords a large degree of freedom for intellectual pursuit of imaginative, intensive, purposeful programs is absolutely essential if research is to yield its highest rewards . . .

"Medical research has grown fabulously in complexity, in costs of instrumentation, in the association and cross-fertilization of thousands of trained perceptive minds which contribute to a common body of knowledge. Work which may continue for months and years without practical results must be sustained. Individuals



John E. McKeen, Hon. AIC

whose drives are toward creativity cannot themselves support such staggering financial burdens. Support must come from institutions, government, universities, medical schools, and, not least, industry . . . Corporations can and do provide enabling facilities for man's creative gifts, furnish incentives, and give a vigorous, stimulating environment for the probing human mind."

Dr. Kane pointed out that "in these modern laboratories, we have consolidated our biochemical, chemical, and microbiological research departments, and staffed them with some 400 scientists and supporting and administrative workers. Our scientists have at their disposal some of the most modern equipment and facilities available for conducting basic and applied research, experimental analyses, pharmacologic studies, and

quality control tests."

Governor Ribicoff paid tribute to scientists: "These scientists are explorers. In the life of all explorers there are times of discouragement. It is important that they do not let these difficulties turn them from their quest. Through their efforts we will live longer and have better health . . . Connecticut is proud to have the Pfizer research laboratories."

Dr. Page summarized what should be expected of the great pharmaceutical industry. It should provide:

- (1) Ethical leadership consistent with the high responsibility industry has assumed.
- (2) Freedom to think and act, with its attendant responsibilities.
- (3) Recognition of the dignity of man and the value of the individual.
- (4) Equality before the law and industrial peace.
- (5) Equality of opportunity.
- (6) A relentless pursuit of excellence.
- (7) A vision of greatness.
- (8) A conquest of disease, poverty and ignorance.
- (9) Tolerance, and compassion for men's weakness.
- (10) Responsibility to God and the people. To accomplish a high purpose you will need them both.

Dr. Page then unveiled the bronze plaque to be affixed permanently to the walls of the new laboratories. Its inscription:

Pfizer Medical Research Laboratories
Dedicated to Scientific Research
in the Service of
Medicine and Mankind
October 6, 1960

Dr. Frederick A. Hessel, F.A.I.C., of General Aniline & Film Corporation, New York, N. Y., treasurer of the AIC, is in Europe until the early part of November. He and Mrs. Hessel are visiting Belgium, France, Italy, and Portugal.

An exhibit showing technological advances in the electrical-electronics field made by inventors and manufacturers under the U. S. Patent System is being held in the Lobby of the Commerce Department Building, Washington, D.C., until Nov. 10.

Progress

An industrial design magazine reports that new products are being introduced into the market place at the rate of 26 a day—and are falling out at the rate of 23 a day; a lot of activity, anyway.



Arthur D. Little, Inc.

ADL offers experience and capability in:

- Corporate Planning and Organization
- Advanced Research and Engineering
- Product Research and Development
- Production Engineering
- Market Analysis and Sales Planning

ADL scientists and engineers work closely with client organizations in performing assigned work through any desired stage of development.

Consultants to Industry
SINCE 1886

Cambridge • New York • Chicago • Washington,
San Francisco • San Juan • Edinburgh

Professional Appointments

Nov. 3, 1960. Philadelphia, Pa. Engineers' Club. Meeting of Philadelphia Chapter. Dinner 6:30 p.m. Talk: 8 p.m. Speaker: Dr. Claude Hills, Chemist, U.S.D.A., Eastern Regional Laboratory, Philadelphia. Topic: "The Philosophy and Methodology of Science." Please make dinner reservations by Oct. 31 with: Dr. C. K. Deischer, Harrison Laboratory, University of Pennsylvania, Philadelphia 4, Pa. (Evergreen 6-0100, Ext. 8317).

Nov. 4, 1960. Birmingham, Alabama. Thomas Jefferson Hotel. Luncheon meeting of Alabama Chapter, 12:15 p.m. Subject, "Chemistry and Chemists—Past, Present, Future." Speakers: Dr. Jack P. Montgomery, Hon. AIC, Professor Emeritus, University of Alabama, "... Past." Dr. Emmett B. Carmichael, F.A.I.C., Assistant Dean, Medical College & School of Dentistry, University of Alabama Medical Center, Birmingham, "... Present," and Martin B. Williams, F.A.I.C., Chemist (Rocket Fuels Research), Army Rocket & Guided Missile Agency, Redstone Arsenal, Huntsville, "... Future."

Nov. 15, 1960. Washington, D.C. Meeting of Washington Chapter. For information, Dr. Anthony M. Schwartz, Secretary of the Chapter, c/o Harris Research Labs., 6220 Kansas Ave., N.E., Washington 11, D.C.

Nov. 16, 1960. Chicago, Ill. Beaubien Room. Meeting of Chicago Chapter. Speaker, Dr. W. S. Guthmann, F.A.I.C., Morton Chemical Company. For information: Chicago Chapter Secretary, Miss Helen Selin, 6916 N. Wayne Ave., Chicago 26, Ill.

Nov. 16, 1960. New York, N. Y. The Chemists' Club, 52 E. 41st St., Meeting of New York Chapter. Speaker: George Polzer, Executive Vice President, Ultra Chemical Works, Paterson, N. J. Subject: "Purchasing—its Importance to the Project." (Part of the theme, "What Every Chemist Should Know About the Chemical Business.")

For Reservations: Dr. Kurt Konigsbacher, Evans Research & Development Corp., 250 E. 43rd St., New York 17, N. Y.

Nov. 17, 1960. Los Angeles, Calif. Los Angeles Athletic Club, 431 W. 7th St. Meeting of Western Chapter. Social Hour 6:30 p.m. Dinner 7:00 p.m. Panel Discussion on "Industrial Training as a Post-Graduate Education." Panelists: Three representatives from research groups in Southern California. For information: Stuart R. Garnett, Chairman, Western Chapter, 506 W. Almond St., Compton 4, Calif.

Nov. 21, 1960. Madison, N. J. Fairleigh Dickinson University. General Meeting of the North Jersey ACS in Conjunction with the Professional Affairs Committee of the North Jersey ACS Section. 8:00 p.m. Panel Discussion, "The Working Chemist and Professionalism." Panel: Dr. Sidney M. Cantor, F.A.I.C.; Dr. H. H. Fox; Dr. W. E. Hanford, Hon. AIC, and Dr. William Rieman III. AIC members are cordially invited. (See page 417).

Dec. 1, 1960. Constableville, N. Y. Hotel Parquet. Social hour 6:30 p.m. Dinner 7:30 p.m. Meeting of Beaver Falls Chapter. Speaker, J. D. Parker, Atomic Energy of Canada Ltd. Subject: "Radioisotope Applications." For information: Carlton Force, Latex Fiber Industries, Beaver Falls, N. Y.

Dec. 1, 1960. Philadelphia, Pa. Luncheon meeting of Philadelphia Chapter. For information, Dr. Ezra Bitcover, Secretary of the Chapter, c/o U. S. Department of Agriculture, Eastern Utilization Research Div., Philadelphia 18, Pa.

Dec. 6, 1960. Niagara Falls, N. Y. Red Coach Inn, Buffalo Avenue & Main St. Meeting of Niagara Chapter. Social Hour, 6:00 p.m. Dinner 7:00 p.m. Speaker, Dr. Milton Harris, AIC President, "The Position of the Chemist in our Society." For reservations (Dinner \$3.00), Dr. J. Frederick Walker, c/o E. I. du Pont de Nemours & Co., Niagara Falls, N. Y. (BU 5-7831, Ext. 421).

Dec. 7, 1960. New York, N. Y. The Chemists' Club, 52 E. 41st St. Meeting of AIC Board of Directors and National Council. Board meets at 5:30; Council at 6:00 p.m.

Dec. 7, 1960. New York, N. Y. The Chemists' Club, 52 E. 41st St., Meeting

of Advisory Board of The Chemist.
Luncheon 12 noon.

Dec. 9, 1960. Minneapolis, Minn.
(Place to be Announced) Meeting of Twin City Chapter. Panel discussion. Subject to be announced. (Possibly a follow-up on what the modernized teaching will mean for the profession of chemistry.) For information: Dr. H. L. Weisbecker, 2138 Berkeley Ave., St. Paul, Minn.

Jan. 18, 1961. Chicago, Ill. Beaubien Room. Meeting of Chicago Chapter. Speaker, Dr. Otto Eisenschiml, F.A.-I.C., Scientific Oil Compounding Co., For information: Chicago Chapter Secretary, Miss Helen Selin, 6916 N. Wayne Ave., Chicago 26, Ill.

Jan. 19, 1961. Minneapolis, Minn.
(Place to be announced) Honor Scroll Presentation meeting of Twin City Chapter. Dr. Milton Harris, AIC President, will discuss program and plans for AIC. For information: Dr. H. L. Weisbecker, 2138 Berkeley Ave., St. Paul, Minn.

Jan. 19, 1961. New York, N. Y.
The Chemists' Club, 52 E. 41st St. Meeting of the New York Chapter. Speaker, Robert Kampschulte, Vice President, Sales, Celanese Chemical Co., New York, N. Y. Subject, "Marketing." (Part of the theme, "What Every Chemist Should Know about the Chemical Business.")

Feb. 2, 1961. Philadelphia, Pa. Meeting of Philadelphia Chapter. Honor Scroll Award Dinner. For information, Dr. Ezra Bitcover, Secretary of the Chapter, c/o U. S. Department of Agriculture, Eastern Utilization Research Div., Philadelphia 18, Pa.

Feb. 7, 1961. Meeting of Niagara Chapter. Place, subject, and speaker to be announced. For information: Prof. Howard W. Post, Secretary of the Chapter, Chemistry Dept., University of Buffalo, Buffalo 14, N. Y.

Feb. 10, 1961. New York, N. Y.
Place to be announced. Joint AIC-ACS meeting under the auspices of the ACS. Subject and speakers to be announced.

Feb. 15, 1961. Chicago, Ill. Beaubien Room. Meeting of Chicago Chapter. Speaker, Dr. A. C. Ivy of the University of Illinois. For information: Chicago Chapter Secretary, Miss Helen

Selin, 6916 N. Wayne Ave., Chicago 26, Ill.

Feb. 16, 1961. Watertown, N. Y.
Hotel Woodruff. Dinner meeting, Beaver Falls Chapter. Social hour 6:30 p.m. Speaker: Dr. Johan Bjorksten, President, Bjorksten Research Labs., Madison, Wis. Subject: "Aging and Its Professional Implications." Ladies Invited. For information: Carlton Force, Latex Fiber Industries, Beaver Falls, N. Y.

Mar. 2, 1961. Minneapolis, Minn.
(Place to be announced) Joint meeting of Twin City Chapter with Minnesota Section ACS, Twin City Section of AIChE, and the Minnesota Industrial Chemists Forum. For information: Dr. H. L. Weisbecker, 2138 Berkeley Ave., St. Paul, Minn.

Mar. 8, 1961. Chicago, Ill. Builders Club. Joint meeting of Chicago Chapter with AIChE. For information: Chicago Chapter Secretary, Miss Helen Selin, 6916 N. Wayne Ave., Chicago 26, Ill.

Apr. 6, 1961. Philadelphia, Pa. Luncheon meeting of Philadelphia Chapter. For information, Dr. Ezra Bitcover, Secretary of the Chapter, c/o U. S. Department of Agriculture, Eastern Utilization Research Div., Philadelphia 18, Pa.

Apr. 13, 1961. Watertown, N. Y.
Hotel Woodruff. Social hour 6:30 p.m. Dinner 7:30 p.m. Meeting of Beaver Falls Chapter with TAPPI. Speaker, Dr. K. A. Arnold, T.D., St. Regis Paper Co., New York, N. Y. Subject: "The Planning of a Technical Center." For information: Carlton Force, Latex Fiber Industries, Beaver Falls, N. Y.

Apr. 19, 1961. Chicago, Ill. Beaubien Room. Meeting of Chicago Chapter. Speaker, Dr. E. J. Sparling of Roosevelt University. For information: Chicago Chapter Secretary, Miss Helen Selin, 6916 N. Wayne Ave., Chicago 26, Ill.

April 20, 1961. New York, N. Y.
Place to be announced. Meeting of New York Chapter. Presentation of Honorary AIC Membership to Dr. Lloyd Van Doren, retired AIC Secretary. Subject of discussion, "Chemical Patent Procedure."

May 4, 1961. Philadelphia, Pa. Meeting of Philadelphia Chapter. For information, Dr. Ezra Bitcover, Secretary of the Chapter, c/o U. S. Department of

Agriculture, Eastern Utilization Research Div., Philadelphia 18, Pa.

May 11-12, 1961. Washington, D.C. Statler Hotel, 38th Annual AIC Meeting. The Washington Chapter will be our host.

May 12, 1961. Minneapolis, Minn. (Place to be announced) Meeting of Twin City Chapter. Presentation of student medals. For information: Dr. H. L. Weisbecker, 2138 Berkeley Ave., St. Paul, Minn.

May 17, 1961. Chicago, Ill. Beaubien Room. Meeting of Chicago Chapter. Speaker, Dr. Gerald Gordon, E. I. du Pont de Nemours & Co. For information: Chicago Chapter Secretary, Miss Helen Selin, 6916 N. Wayne Ave., Chicago 26, Ill.

May 25, 1961. New York, N. Y. Place to be announced. Presentation of the Honor Scroll of the New York Chapter. Honoree and details to be announced.

June 21, 1961. Chicago, Ill. Beaubien Room. Meeting of Chicago Chapter. Speaker, Dr. A. Allan Bates, Portland Cement Association. For information: Chicago Chapter Secretary, Miss Helen Selin, 6916 N. Wayne Ave., Chicago 26, Ill.

Subjects of Washington Chapter Programs

The Washington AIC Chapter met, October 11, at Marriott Key Bridge Motor Hotel, Washington, D.C. Prof. Charles H. Goodman, School of Government and Public Administration, spoke on "Motivation of Chemists in Government and Industry." Panel discussion leaders were Dr. Paul Foote, vice president of research, Gulf Oil Corp., retired; Dr. Jacque C. Morrell, formerly associate director and head of patent department, Universal Oil Products Co., and Dr. Edward Wichers, associate director, Bureau of Standards.

Topics for discussion at future meetings will be:

- "Problems of Chemical Management in the Sixties"
- "Foreign Chemical Industry and Its Impact"
- "Techniques for Monitoring Research"
- "Problems of Salary Administration"
- "Growing Horizons in Chemistry"
- "Personnel Procurement Problems"
- "Crisis in Chemical Education"

The Alabama AIC Chapter met October 15, 1960, at Mound State Park, Moundville, Alabama, to hear Dr. William Graham Echols, archaeologist, minister, and former director of the Wesley Foundation, University of Alabama, speak on "Archaeology, History, and Modern Impressions of the Middle East."

NOW OVER 5100 BIOS CHEMICALS

- CALCIUM FLUOZIRCONATE
- CALCIUM GLYCOCHOLATE
- CALCIUM MALATE
- CALCIUM METABORATE
- CALCIUM SUCRATE
- CALCIUM UNDECYLENATE
- CAMPHOQUINONE
- CAMPHOR SALICYLATE
- CAMPHYLAMINE
- CANTHARIDIN
- CARNAUBIC ACID
- CARNAUBYL ALCOHOL
- CARONAMIDE
- CARRAGHEENIC ACID
- CARRAGHEENIN

BIOS

Ask for our new
complete catalogue.

Laboratories Inc.

17 West 60th St. New York 23, N. Y.
PLaza 7-8171

Track said to be made by
"Abominable Snowman" whose existence
is being explored by
current expeditions to the Himalayas.

*a Trace
a Mountain
a Man*

Somewhere in the Himalayas, man may find the answer to one perplexing trace problem... who or what is the "Abominable Snowman"? ♪ At Evans Research, tracking down answers to industry's trace problems is one of our important activities. ♪ Highly advanced gas chromatography, diversified spectroscopic facilities, radiochemical and biochemical techniques are some of our tools. ♪ But always, it's the man behind the tool who climbs the mountain. Write for our new brochure on trace analysis.

DEPT. NO. TAI



EVANS RESEARCH
AND DEVELOPMENT CORPORATION
250 East 43rd Street, New York 17, New York



TYGON TUBING

Glass clear for solution visibility, softly flexible for easy use, Tygon Tubing is made in 66 sizes. Conveniently packaged with every foot branded for your protection.

● *At your Laboratory Supply House*

U. S. STONWARE

AKRON 9, OHIO

